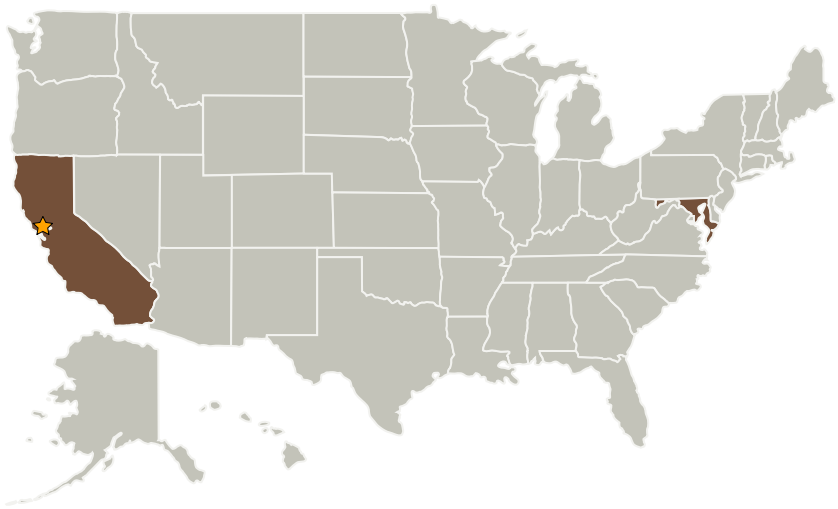
Advanced Regenerator for High Frequency Low Temperature Operation, Phase I

Completed Technology Project (2006 - 2006)

Project Introduction

The key element in producing an efficient low temperture cryocooler is the performance of the regenerator. It must have good heat transfer characteristics while providing low pressure drop, especially for compact high speed coolers. The axial thermal conductivity must be low to reduce losses but provide good radial conductivity for flow uniformity and maximum use of all material. At low termperatures, the heat capacity of the regenerator material must be high to achieve these low temperatures. The geometry of the regenerator material will be investigated to meet the requirements and minimize losses while providing the necrssary characteristics for efficient cryocooler performance. Altermative fabricaiton methods and materials, including rare earths will also be investigated to take advantage of the improved low temperature material properties.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★Ames Research Center(ARC)	Lead Organization	NASA Center	Moffett Field, California
Chesapeake Cryogenics, Inc.	Supporting Organization	Industry	Arnold, Maryland

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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Ames Research Center (ARC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Primary U.S. Work Locations	
California	Maryland

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX14 Thermal Management Systems
  - TX14.1 Cryogenic Systems
    - TX14.1.3 Thermal Conditioning for Sensors, Instruments, and High Efficiency Electric Motors